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National Cooperative Geologic Mapping Program

NEW HAMPSHIRE INDEX OF SURFICIAL GEOLOGIC MAPS

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SUMMARY OF STATEMAP
GEOLOGIC MAPPING PROGRAM IN NEW HAMPSHIRE

Federal Fiscal Year	96	97	98	99	00	01	02	03	04	05	Total
Federal Dollars Awarded to DES	$35,000	$50,000	$48,000	$60,000	$25,000	$52,465	$41,545	$45,000	$68,717	$53,556	$479,283

What is a Geologic Map

Geologic maps are an important source of natural-resource information. They depict the underlying bedrock (solid rock near the earth's surface) or surficial geologic materials (e.g., alluvium, glacial deposits), as if the soils and vegetation had been removed. In New Hampshire, bedrock consists of igneous and metamorphic (crystalline) rocks. Alluvium, which consists of unconsolidated sand, gravel, clay, and silt in stream valleys – is younger than the underlying bedrock. Glacial deposits consist of material that has been transported by glaciers and deposited directly by the ice (glacial till) or by glacial melt water (glacial drift) on the underlying bedrock. In some areas, these deposits can be hundreds of feet thick. Geologic maps graphically show the rock type, age, and horizontal distribution of bedrock and surficial deposits near the earth's surface. Geologic maps also show the related geologic structures (faults, fractures, and folds) that would be exposed if the soils were stripped away.

A geologic map shows the distribution of rock units and other geologically related information within a specific geographic area. Each rock unit is identified and named based on distinctive characteristics that can be mapped over large distances. Geologic maps provide a way of presenting the three-dimensional shape of the bedrock geology on a flat piece of paper using lines, symbols, and colors.

Benefits and Uses

Geologic maps are usually the starting point for any geologically related investigation. They are useful in construction and engineering projects, city and county planning, and in a variety of environmental assessments. Large projects (dams, roads, bridges, buildings) require detailed geologic analysis because of monetary, health, and safety concerns. Smaller projects, such as surface water impoundments, houses and water wells, benefit from an understanding of the surficial geology. For example, if a farm pond is located in porous glacial deposits (such as sand and gravel), these materials may function as a drain, and the pond will not hold water. If placed in a less porous unit (such as glacial till, which contains clay), the pond should not leak. This basic information about the local geology can be ascertained from a geologic map. Other examples of how geologic maps can be used are listed below.

-Evaluation of geologic hazards (landslides, earthquakes, land subsidence)
-Planning transportation and utility routes
-Site selection for public facilities (landfills, treatment facilities, waste-disposal sites, schools)
-Land-use planning and evaluation of land-use proposals
-Regulatory decision-making
-Environmental assessment and protection planning (underground storage tanks, landfills, aquifer contamination)
-Development and protection of ground water
-Natural-resource assessment, exploration, development, and management
-Basic earth-science research

Geologic maps can be used to evaluate and predict the consequences of natural and human-induced activities on the environment. Using the information on geologic maps during a project's planning and design stage produces long-term benefits and reduces problems that may develop after the project is completed.

Geologic Mapping in New Hampshire

The New Hampshire Geological Survey (NHGS), a unit of the NH Department of Environmental Services, actively participates in the U.S.G.S. Federal Cooperative STATEMAP program. New Hampshire has been glaciated several times in recent geologic history, and the resulting surficial geologic materials directly affect all forms of land use. As a result, NHGS mapping has focused on completing geologic mapping of these surficial materials. The engineering properties of these surficial deposits have significant implications for highway and building-foundation construction, and waste management. In addition, much of the water supply for the state's communities is derived from surficial deposits. Geologic maps are important sources of information for aiding in water-supply evaluation and protection, land-use planning, transportation design, resource evaluation, recreation, and seismic-risk evaluation. Comprehensive geologic information is needed to address these issues and to provide the foundation for proper planning and preventative measures to ameliorate these and other environmental problems in the future. To date, NHGS has completed surficial geologic mapping in 76 of the 213 quadrangles that encompass the state, which amounts to approximately 36% completion. The map on the opposite side shows the status of surficial mapping for the state.

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